



Technical Standard Order

Subject: TSO-C9c, AUTOMATIC PILOTS

Technical Standard Orders for Aircraft Materials, Parts, Processes, and Appliances

Part 514 contains minimum performance standards and specifications of materials, parts, processes, and appliances used in aircraft and implements the provisions of sections 3.18, 4a.31, 4b.18, 6.18 and 7.18 of the Civil Air Regulations. The regulation uses the Technical Standard Order system which, in brief, provides for FAA-industry cooperation in the development of performance standards and specifications which are adopted by the Administrator as Technical Standard Orders, and a form of self-regulation by industry in demonstrating compliance with these orders.

Part 514 consists of two subparts. Subpart A contains the general requirements applicable to all Technical Standard Orders. These provisions are summarized below for the convenient reference of the public. Subpart B contains the technical standards and specifications to which a particular product must conform, and each Technical Standard Order is set forth in the appropriate section of Subpart B. The subject Technical Standard Order is printed below. ANY TECHNICAL STANDARD ORDER MAY BE OBTAINED BY SENDING A REQUEST TO FAA, WASHINGTON 25, D.C.

SUBPART A--GENERAL

This subpart provides, in part, that a manufacturer of an aircraft material, part, process, or appliance for which standards are established in Subpart B, prior to its distribution for use on a civil aircraft of the United States, shall furnish a written statement of conformance certifying that the material, part, process, or appliance meets the applicable performance standards established in this part. The statement of conformance must be signed by a person

duly authorized by the manufacturer, and furnished to the Chief, Engineering and Manufacturing Division, Bureau of Flight Standards, Federal Aviation Agency, Washington 25, D. C.

Subpart A also requires appropriate marking of materials, parts, processes, and appliances as follows:

(a) Name and address of the manufacturer responsible for compliance,

- (b) Equipment name, or type or model designation,
- (c) Weight to the nearest pound and fraction thereof,
- (d) Serial number and/or date of manufacture, and
- (e) Applicable Technical Standard Order (TSO) number.

In addition, Subpart A provides that no deviation will be granted from the performance standards established in Subpart B, and that the Administrator may take appropriate action in the event of noncompliance with Part 514.

SUBPART B

§ 514.19 Automatic pilots - TSO-C9c -- (a) Applicability-- (1) Minimum performance standards. Minimum performance standards are hereby established for automatic pilots to maintain flight and/or to provide maneuvering about the three axes through servo control which specifically are required to be approved for use in civil aircraft of the United States. New models of autopilots manufactured for such use on or after September 15, 1960, shall meet the standards set forth in SAE Aeronautical Standard AS-402A, "Automatic Pilots," dated February 1, 1959.^{1/} with the exceptions, listed in subparagraph (2) of this paragraph and the additions listed in subparagraph (3) of this paragraph. Automatic pilots approved by the Administrator prior to September 15, 1960, may continue to be manufactured under the provisions of their original approval.

(2) Exceptions. (i) Conformance with the following section is not required: 3.1, 3.1.1, 3.1.2, 3.2.

(ii) Substitute the following for section 7.: "Performance tests: The following tests, in addition to any others deemed necessary by the manufacturer, shall be the basis for determining compliance with the performance requirements of this standard."

(3) Additions. In addition to the means of indication specified in § 4.3 of AS-402A, the following shall be included:

(i) Power malfunction indication. Means shall be provided to indicate readily to the pilot in a positive manner when each phase of the primary power (voltage and/or current) to the automatic pilot is not adequate for safe operation.

(ii) Airborne navigation reference indication. A visual means shall be provided to indicate readily to the pilot in a positive manner when the automatic pilot is not engaged to the airborne navigation reference.

(b) Marking. In addition to the markings required in subpart A, range and/or rating if definable shall be shown on each component of the system.

^{1/} Copies may be obtained from the Society of Automotive Engineers, 485 Lexington Avenue, New York 17, N. Y.

(c) Data requirements. One copy each of the following shall be furnished to the Chief, Engineering and Manufacturing Division, Bureau of Flight Standards, Federal Aviation Agency, Washington 25, D.C.:

- (1) Manufacturer's operating instructions,
 - (2) Manufacturer's typical installation instructions,
 - (3) Exploded views for each major component of the system,
 - (4) Schematic diagrams for each major component and the system,
 - (5) The manufacturer's compliance test report.
- (d) Effective date. September 15, 1960.